

What the National Academy of Sciences Study will Provide

Section 1333 of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA) provides the BLM with the authority to consult with individuals independent of Federal and State government who have been recommended by the **National Academy of Sciences**, and other individuals determined to have scientific expertise and special knowledge of WH&B protection, wildlife management and animal husbandry as related to rangeland management.

1. Conduct an independent, technical evaluation of the science, methodology, and technical decision-making approaches of the WH&B Program. In evaluating the program, the study will build on findings of three prior reports prepared by the National Research Council (NRC) in 1980, 1982, and 1991 and summarize additional, relevant research completed since the three earlier reports were prepared.
2. Relying on information about the program provided by BLM and on field data collected by BLM and others, the analysis will address the following key scientific challenges and questions:
 - a. **Estimates of the WH&B populations:** Given available information and methods, how accurately can WH&B populations in the West be estimated? What are the best methods to estimate WH&B herd numbers and what is the margin of error in those methods? Are there better techniques than the BLM currently uses to estimate population numbers? For example, could genetics or remote sensing using unmanned aircraft be used to estimate WH&B population size and distribution?
 - b. **Population Modeling:** Evaluate the strengths and limitations of the WinEquus population model for predicting impacts on wild horse populations given various stochastic factors and management alternatives. What types of decisions are most appropriately supported using the WinEquus model? Is there a better model (i.e. the HSUS model) the BLM should consider for future uses?
 - c. **Genetic diversity in WH&B herds:** What does information available on WH&B herds' genetic diversity indicate about long-term herd health, from a biological and genetic perspective? Is there an optimal level of genetic diversity within a herd to manage for? What management actions can be undertaken to achieve an optimal level of genetic diversity if it is too low?
 - d. **Annual rates of WH&B population growth:** Evaluate estimates of the annual rates of increase in WH&B herds, including factors affecting the accuracy of and uncertainty related to the estimates. Is there compensatory reproduction as a result of gathers to remove excess WH&B or application of PZP-22 over a 4-year gather cycle, and if so, what is the level of compensatory reproduction occurring? Would WH&B populations self-limit if they were not controlled, and if so, what indicators (rangeland condition, animal condition, health, etc.) would be present at the point of self-limitation?
 - e. **Predator impact on WH&B population growth:** Evaluate information relative to the

abundance of predators and their impact on WH&B populations. Although predator management is the responsibility of the USFWS or State wildlife agencies and given the constraints in existing federal law, is there evidence that predators alone could effectively control WH&B population size in the West?

- f. **Population control:** What scientific factors should be considered when making population control decisions (roundups, fertility control, sterilization of either males or females, sex ratio adjustments to favor males and other population control measures) relative to the effectiveness of control approach, herd health, genetic diversity, social behavior, and animal well-being?
- g. **Immunocontraception of wild horse mares (porcine zona pellucida):** Evaluate information related to the effectiveness of immunocontraception in preventing pregnancies and reducing herd populations. Are there other fertility control agents or population control methods the BLM should consider (for either mares or stallions)?
- h. **Managing a portion of a population as non-reproducing:** What factors should the BLM consider when managing for WH&B herds with a reproducing and non-reproducing population of animals (i.e., a portion of the population is a breeding population and the remainder is non-reproducing males or females)? When implementing non-reproducing populations, which tools should be considered (geldings (castration), sterilized (spayed) mares or vasectomized stallions or other chemical sterilants)? Is there credible evidence to indicate vasectomized stallions in a herd would be effective in decreasing annual population growth rates, or are there other methods the BLM should consider for managing stallions in a herd that would be effective in tangibly suppressing population growth?
- i. **AML Establishment or Adjustment:** Evaluate the BLM's approach to establishing or adjusting AML as described in the 4700-1 Wild Horses and Burros Management Handbook. Are there other approaches to establishing or adjusting AML the BLM should consider? How might BLM improve its ability to validate AML?
- j. **Societal Considerations:** What options are available to BLM to address the widely divergent and conflicting perspectives about WH&B management and consider stakeholder concerns while using the best available science to protect land and animal health?
- k. **Additional Research Needs:** Identify research needs and opportunities related to the topics listed above. What research should be the highest priority for the BLM to fill information and data gaps, reduce uncertainty, and improve decision-making and management?